

Claims

What is claimed is:

- 5 1. A method of interleaving storage of data streams on a rotating storage medium of a data storage device, the method comprising:
dividing the storage medium into a plurality of logical zones, each logical zone of the plurality of logical zones extending radially from an inner diameter of the storage medium to an outer diameter of the storage medium; and
10 writing data from a first stream of data to a first logical zone of the plurality of logical zones for up to an amount of time corresponding to a rotational speed of the storage medium and a size of the first logical zone.
- 15 2. The method of claim 1, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on the rotational speed of the storage medium and an output data rate.
- 20 3. The method of claim 1, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on a data transfer rate of the data storage device and an expected output data rate supported by the data storage device.
- 25 4. The method of claim 1, further comprising recording an index for at least the beginning of the first logical zone.
5. The method of claim 1, further comprising prior to writing data from a first stream of data to a first logical zone of the plurality of logical zones:
determining a current location on the storage medium;
determining whether the current location is a beginning of the first logical zone; and

responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone.

- 5 6. The method of claim 5, wherein writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises writing data starting at an outer diameter of the storage medium and progressing toward an inner diameter of the storage medium.
- 10 7. The method of claim 1, further comprising writing data from a second stream of data in a second logical zone of the plurality of logical zones.
- 15 8. The method of claim 1, further comprising:
determining a current location on the storage medium;
determining whether the current location is a beginning of the first logical zone, and
responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone; and
reading the data from the first stream of data to the storage medium for up to an amount of time corresponding to a rotational speed of the storage medium and size of the
20 first logical zone.

9. A data storage device comprising:
 - one or more read/write heads;
 - a rotating storage medium accessible by the one or more read/write heads;
 - a processor coupled with the read/write heads to access data on the storage medium; and
 - 5 a memory connected with and readable by the processor and having stored therein instructions that, when executed by the processor, cause the processor to interleave storage of data streams on the rotating storage medium by dividing the storage medium into a plurality of logical zones, each logical zone of the plurality of logical zones extending radially from an inner diameter of the storage medium to an outer diameter of the storage medium, and writing data from a first stream of data to a first logical zone of the plurality of logical zones for up to an amount of time corresponding to a rotational speed of the storage medium and a size of the first logical zone.
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- 15 10. The data storage device of claim 9, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on the rotational speed of the storage medium and an output data rate.
11. The data storage device of claim 9, wherein dividing the storage medium into a plurality 20 of logical zones comprises determining a number of logical zones based on a data transfer rate of the data storage device and an expected output data rate supported by the data storage device.
12. The data storage device of claim 9, further comprising recording an index for at least the 25 beginning of the first logical zone.
13. The data storage device of claim 9, further comprising prior to writing data from a first stream of data to a first logical zone of the plurality of logical zones:
 - determining a current location on the storage medium;
 - 30 determining whether the current location is a beginning of the first logical zone; and

responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone.

- 5 14. The data storage device of claim 13, wherein writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises writing data starting at an outer diameter of the storage medium and progressing toward an inner diameter of the storage medium.
- 10 15. The data storage device of claim 9, further comprising writing data from a second stream of data in a second logical zone of the plurality of logical zones.
16. The data storage device of claim 9, further comprising:
 - 15 determining a current location on the storage medium;
 - determining whether the current location is a beginning of the first logical zone, and
 - responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone; and
- 20 reading the data from the first stream of data to the storage medium for up to an amount of time corresponding to a rotational speed of the storage medium and size of the first logical zone.

22. The computer readable medium of claim 21, wherein writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises writing data starting at an outer diameter of the storage medium and progressing toward an inner diameter of the storage medium.

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23. The computer readable medium of claim 17, further comprising writing data from a second stream of data in a second logical zone of the plurality of logical zones.
24. The computer readable medium of claim 17, further comprising:
 - determining a current location on the storage medium;
 - determining whether the current location is a beginning of the first logical zone, and responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone; and
 - reading the data from the first stream of data to the storage medium for up to an amount of time corresponding to a rotational speed of the storage medium and size of the first logical zone.